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ABSTRACT

Bilingualism in the Computer Age, a federally-funded bilingual education program at Morris High School in the Bronx (New York), served 197 native low-income Spanish-speaking students in its second year of funding. Program objectives were to improve students' English language proficiency and mainstream them as quickly as possible, develop their native language skills, enhancing their self-image, and provide career-oriented training in computer use. Extensive support services were also provided. The program achieved its objectives in English as a Second Language, native language arts, computer instruction, career orientation, attendance, and one staff development objective; the second staff development objective could not be assessed as proposed. The program did not meet its objectives in content-area subjects or New Environmental Workshops, and it could not be determined whether objectives in cultural awareness and dropout rates were met. Program participation and staffing dropped during this funding year. Major program strengths included incorporation of computer learning in the content areas and the commitment of staff. Major weaknesses were lack of teacher training in computers, lack of needed social work personnel, and late receipt of program funds. Recommendations for improvement include staff training in computer use, additional social support personnel, increased content area offerings, and rewriting of the cultural awareness objective. (MSE)

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OREA Report

EVALUATION SECTION REPORT

BILINGUALISM IN THE COMPUTER AGE

1987-88

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EVALUATION SECTION
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EVALUATION SECTION REPORT

BILINGUALISM IN THE COMPUTER AGE

1987-88

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BILINGUALISM IN THE COMPUTER AGE*
1987-88

SUMMARY

- Bilingualism in the Computer Age was fully implemented except for the New Environmental Workshops. During the 1987-88 school year, students received instruction in English as a second language (E.S.L.), native language arts (N.L.A.), content area courses, computer skills, and career orientation. The program also provided activities for staff development.

- The project achieved its objectives for E.S.L., N.L.A., computer instruction, career orientation, and attendance, and partially met its staff development objectives. It did not meet its objectives in content area courses or New Environmental Workshops. Because of a lack of data, the objectives in dropout rate, cultural awareness, and one objective in staff development could not be assessed as proposed.

Bilingualism in the Computer Age, at Morris High School in the Bronx, completed its second year of a three-year funding cycle under Title VII of the Elementary and Secondary Education Act (E.S.E.A.). The program's major objectives were: to improve students' English language proficiency and mainstream them as quickly as possible; to develop their native language skills; to enhance students' self-image; and to provide career-oriented training in computer use. During fall 1987, the program served 197 Spanish-speaking students from low-income families.

Students were programmed for nine 40-minute instructional periods and were provided extensive support services. In addition to English as a second language (E.S.L.), native language arts (N.L.A.), and content area instruction, the program offered computer instruction. Many content area courses paralleled mainstream courses, and all fulfilled city and state requirements. Support services included a counseling and guidance department. Staff development was extensive.

Students entered the program on the bases of scores below the twenty-first percentile on the Language Assessment Battery (LAB), their records, teacher evaluations of tests, and the counselor's assessment of students' capabilities.

Bilingualism in the Computer Age achieved the program objectives in E.S.L., N.L.A., computer instruction, and career orientation; 75 percent of the students made significant gains on

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*This summary is based on the final evaluation of the "Bilingualism in the Computer Age 1987-88" prepared by the OREA Bilingual Education Evaluation Unit.

the Criterion Referenced English Syntax Test (CREST), 80 percent made an average gain of 16 points on La Prueba de Lectura, and 80 percent achieved the passing criterion on teacher-made computer tests. The program also achieved its objective in student attendance; program students' attendance was significantly higher than that of the school as a whole. There was a great deal of staff development activity. The program met one staff development objective, but the other could not be assessed as proposed. The project did not meet its objectives in content area subjects or New Environmental Workshops. It could not be determined whether the project met the cultural awareness or the dropout rate objectives.

The number of students served by the project decreased from 335 in 1986-87 to 197 in 1987-88. The program funded five staff members this year as compared with six in the previous year. This year the program met the N.L.A. objective; last year students failed to make significant gains in Spanish language skills.

The major strengths of the project included its incorporation of computer learning in the content areas and the commitment of the staff. The program's major weaknesses were lack of teacher training in computers, the dearth of much-needed social work personnel, and the late receipt of program funds.

The conclusions, based on the findings of this evaluation, lead to the following recommendations:

- If funds permit, hire professional staff development specialists to train teachers in computer skills.
- If funds permit, hire additional support personnel such as a social worker or another family assistant.
- Offer content area courses (particularly social studies) in both fall and spring semesters.
- Rewrite the cultural awareness objective to make it measurable.

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I. INTRODUCTION

This report documents the Office of Research, Evaluation, and Assessment's (OREA's) evaluation of the Elementary and Secondary Education Act (E.S.E.A.) Title VII program, Bilingualism in the Computer Age at Morris High School.

The goals of the program were to: rapidly develop students' English language proficiency so they could be mainstreamed as quickly as possible, develop students' native language skills, enhance students' computer skills, increase students' participation, and give them a feeling that they could succeed in society. An additional goal of the program was to provide career-oriented training in computer use.

Morris's principal was appointed in the fall of 1984. She fully understands the special needs of bilingual students and supports the program. In fact, she told a member of the evaluation team that she had worked successfully to establish an educational program in bilingual business and to provide resources for students enrolled in the Title VII program. She was also successful in bringing ASPIRA (an advocacy group for Puerto Ricans that provides education and counseling services) to Morris, and in getting state funds for a computer program for bilingual students' parents.

SCHOOL AND COMMUNITY CONTEXT

Morris High School is located in the poorest congressional district in the United States, with many abandoned buildings and single-parent households. There is a high level of crime,

violence, and unemployment. For the most part, students in the program came from the neighborhood.

Because of the high unemployment rate and the large number of single-parent households, many students were obliged to work part-time in order to support themselves and their families. There were quite a few pregnant students, and some of them had to support their own children. About 80 percent of the students read below grade level.

The school was built in 1901 and is the oldest public high school building in New York City. The building was in very poor condition. A consultant observed that some classroom windows were missing, and a classroom had a hole in the ceiling through which water was falling onto the students' computer equipment.

ORGANIZATIONAL STRUCTURE

The program was centralized. The project director supervised all the instructional personnel and the project coordinator. The project staff at the school were responsible to the school's principal.

Program staff members told a field consultant that they were satisfied with the existing organizational structure of the project. It allowed them to coordinate their work, discuss their problems with one another, and exchange information.

STAFF

Title VII funded five of the program's positions: a program

coordinator, a bilingual family assistant, two bilingual educational assistants who worked in the English as a second language (E.S.L.) classes, and a secretary. The remaining positions were funded by Chapter 1, Pupils with Compensatory Educational Needs (P.C.E.N.), and basic tax-levy monies.

The project director, not paid from Title VII funds, was also the assistant principal (A.P.) for foreign languages and E.S.L. He had a total of 28 years of experience in foreign languages and bilingual education and was responsible for achieving the basic goals of the program.

The project coordinator evaluated placement, coordinated student testing, edited the bilingual newsletter, and assumed other project-related tasks. The paraprofessionals assisted the teachers in the classroom and the content area teachers in the computer room.

The project director and other staff members mentioned that the program would benefit if there were a teacher trainer in computers. The project coordinator had to train himself in the use of computers, although Title VII was supposed to provide funds for college courses in computer literacy for program staff.

The staff felt that more social work personnel were needed to deal with the problems related to drugs, homelessness, teenage pregnancies, and lack of food among program students. Staff members also mentioned that keeping the school open every day after 3:00 p.m. (there is already a Friday after-school program

in place) and providing food for the most needy program students would be great assets to the program.

FUNDING

Tax-levy funds covered the cost of a bilingual guidance counselor and grade advisor, positions that were previously funded under Title VII. On the other hand, the secretary worked solely for the Title VII-funded program this year and did not work for nonprogram staff as she had the previous year. Because the school did not get some of its program funds until May, project staff had difficulty implementing the program in a timely manner. The school's principal helped the project by providing funds from other sources, and the staff did creative fundraising.

II. STUDENT CHARACTERISTICS

In 1987-88, Morris's student body was 38 percent black and 62 percent Hispanic. Of the 197 project students for whom data were provided in the fall, 193 were Spanish-speakers. The majority (38 percent) were born in Puerto Rico, and the second largest percentage (29 percent) were born in the Dominican Republic. Thirty percent of the students were overage for their grade level. (See Table 1.)

STUDENT PLACEMENT

Students who scored below the twenty-first percentile on the Language Assessment Battery (LAB)* test were asked to participate in the program. Students' records and teacher evaluations of students' English, Spanish, and mathematics test results as well as assessment by the bilingual guidance counselor were other criteria used in the selection process.

Many students faced problems that impeded their successful performance in the program. For example, because of poor housing, students moved frequently. They also returned to their native countries for prolonged periods in order to be with their families. Both factors contributed to a high turnover rate.

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*The Language Assessment Battery (LAB) was developed by the Board of Education of the City of New York to measure the English-language proficiency of nonnative speakers of English in order to determine whether their level of English proficiency is sufficient to enable them to participate effectively in classes taught in English. Students scoring below the twenty-first percentile on the LAB are entitled to bilingual and E.S.L. services.

TABLE 1

Number of Program Students by Age and Grade

Age	Grade 9	Grade 10	Grade 11	Grade 12	Total
13	9				9
14	19	7		1	27
15	26	18	4		48
16	17	18	12	1	48
17	7	11	17	3	38
18		2	13	2	17
19		1	7		8
23		1			1
TOTAL	78	58	53	7	196

Overage Students					
Number	24	15	20	0	59
Percent	30.8	25.9	37.7	0	30.1

- The largest number of participating students were in the ninth grade.
- Thirty percent of the students were overage for their grade placement.

In addition, many students were undocumented immigrants and therefore had difficulty being accepted by postsecondary schools. Because of the poverty level of the program's population (all were eligible for the school's free lunch program), many students were forced to work part-time after school. Some were even encouraged by their families to drop out. Some students came to school hungry because there was no food at home. Finally, there was an increase in student pregnancies this year. (The school was trying to open a child care center.)

The family assistant said that program students had serious domestic problems, and she found herself overwhelmed with work and needed help from a professional social worker. The family assistants often had to visit buildings infested with crack dealers and drug-users. She stated that the program needed more trained personnel to deal with these critical matters.

Other staff members said that they had difficulties with students from different grade backgrounds who were placed in the same class. Some students had only third grade schooling in their native countries, and about 80 percent read below grade level in their native languages. Because some students had problems in mathematics, the project director and a teacher gave tutorial classes in mathematics after school in the spring term.

PROGRAMMING

The program students received instruction in E.S.L., English, science, social studies, Spanish, mathematics, and computers. The bilingual content area courses paralleled those taught in English, and final examinations were the same for mainstream and bilingual classes. Students in the program attended classes nine periods a day. One aspect of the program was a writing skills component in which content area classes met in the computer room once a week to learn word-processing skills in order to apply them to writing short essays.

MAINSTREAMING

Program students were mainstreamed gradually. Students generally remained in the program for two years. After they were mainstreamed, the students could elect to continue receiving program services. These services were basically supportive in nature: counseling, getting paychecks for after-school work, and working with ASPIRA. The guidance counselor tracked former program students. Usually 70 students were mainstreamed each year and generally performed very well afterward. Their success was measured by their place in the graduating class and by the number who went on to college. This year, former program students were in the top ten percent of the graduating class; 25 students were admitted to Fordham University; and 35 entered a New York City vocational program (School of Cooperative Technical Education). In this program, students could acquire occupational training in a variety of areas such as computer-assisted drafting

and design; electronics and computer maintenance and repair; building construction and repair; etcetera. Ten percent of former program students received special honors and scholarships.

III. EVALUATION FINDINGS

The Office of Research, Evaluation, and Assessment (OREA) evaluated the Bilingualism in the Computer Age project by examining test results and project records, interviewing school and project personnel, and observing classes.

INSTRUCTIONAL ACTIVITIES

The project proposed instructional objectives in E.S.L., N.L.A., content area subjects, New Environmental Workshops, computer/career instruction, and career orientation.

English as a Second Language

- As a result of participating in the program, 75 percent of the program students will demonstrate significant gains in English language proficiency.

Implementation. All program students were required to take two double periods of E.S.L. per day (writing and reading). There were four levels of E.S.L. instruction: beginning, intermediate, advanced, and transitional.

A field consultant observed an E.S.L. writing and reading lab that was conducted entirely in English. The aim of the lesson was to review for an exam. The students began by defining particular words. After this they worked on a reading lesson based on an African short story. The students sat in pairs and read their answers to questions from the book and responded verbally to queries from the teacher. The students actively participated. They were learning not only how to read and speak

English well (the teacher often corrected their pronunciation), but also about people from other cultures. For example, the teacher led a discussion about the origins of African peoples.

In an E.S.L. transitional class, students wrote a paragraph in English on subjects such as "going steady is a headache" and "never go steady until you are ready." The class was conducted entirely in English. Students worked quietly on their assignments.

Outcomes. The project provided complete data for 109 students on the Criterion Referenced English Syntax Test (CREST).* Ninety-six of them (88 percent) made gains. The mean gain for all students was four objectives (S.D.= 3.8), which was statistically significant ($p < .05$). Bilingualism in the Computer Age met its proposed E.S.L. objective.

Native Language Arts

- Eighty percent of the program students will show significant gains in Spanish language achievement.

Implementation. Seven Spanish language courses were offered. Program students were placed in these classes according to their performance on a test administered by the program director. There was an emphasis on native history and culture on

*The Criterion Referenced English Syntax Test (CREST) was developed by the Board of Education of the City of New York to measure mastery of instructional objectives of the E.S.L. curricula, and thus was constructed to maximize content validity. The test contains four items per curricular objective, and mastery of an objective is achieved when three of these items are answered correctly. The test measures mastery of 25 objectives at Levels 1 and 2, and 15 objectives at Level 3.

every level, and native language instruction ranged from basic skills to advanced short essays.

Outcome. Students took La Prueba de Lectura at the beginning of the fall semester and at the end of the spring semester. Complete data were available for 95 students.

The average gain for all students was 16 points, statistically significant ($p < .05$). Although the differences for all levels were also statistically significant, the objective was not met because the percentage of students who showed gains was 76.8 instead of the 80 percent proposed by the objective. (See Table 2.) It should be noted, however, that the project came very close to achieving its objective.

To show educational meaningfulness, OREA calculated the effect size.* The overall effect size was .57, which indicated that gains were moderately meaningful.

Content Area Subjects

- Seventy percent of the program students enrolled in content-area classes will pass teacher-made final examinations in mathematics, science, and social studies.

Implementation. Program students took classes in fundamental or computer mathematics, science, and social studies.

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* The effect size, developed by Jacob Cohen, is a ratio of the mean gain to the standard deviation of the gain. This ratio provides an index of improvement in standard deviation units irrespective of the size of the sample. Effect size (E.S.) is interpreted to indicate educational meaningfulness, and an E.S. of .80 is thought to be highly meaningful, while one of .20 is considered to be only slightly so.

TABLE 2

Pretest/Posttest Differences on
La Prueba de Lectura, by Level

Level	Number of students	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
2	5	26.2	8.2	85.8	17.2	59.6	22.0	6.05*	2.71
3	42	69.6	25.2	78.7	20.9	9.1	31.1	1.89*	.29
4	37	45.9	18.9	63.5	21.8	17.6	21.4	5.01*	.82
5	11	30.1	18.4	48.0	18.4	17.9	21.4	2.77*	.84
TOTAL	95	53.5	26.4	69.6	23.3	16.1	28.1	5.57*	.57

$p<.05$

- Gains were significant for the group as a whole and for each level individually.

Science offerings included biology and chemistry; social studies courses included history, global history, American history, government, and economics. The project director expressed some concern about the lack of sufficient social studies classes, because the school offered some in only one semester. If a student failed a course in American history, he or she would not be able to take it again until the following year. The content area courses paralleled mainstream courses and all carried credits necessary for graduation.

The plan of the program was to increase the use of English in bilingual content area classes from 15 percent at the beginning levels to 85 percent at advanced levels, after which most students were ready to be mainstreamed.

A field consultant visited a global history class. The aim of the lesson was to discuss political and economic relations between Japan and other Asian countries. The discussion centered around Japanese investments in Asia and the relations between Japan and China and Japan and the Soviet Union. The lesson was conducted in Spanish and the teacher used an overhead projector to show maps of the countries. The students participated actively and initiated discussions on their own about related topics.

Outcome. The project reported results for teacher-made tests in mathematics, science and social studies. Of 100 students taking science classes, 70 percent achieved a passing grade of 65 or better, thus meeting the proposed criterion. In

mathematics and social studies, only 50 percent and 49 percent, respectively, achieved the passing grade of 65. Therefore, the project did not meet the objective for the content area subjects.

New Environmental Workshops

- Ninety percent of the students enrolled in the New Environmental Workshops will demonstrate knowledge of job-searching techniques and of the educational, health-care, and cultural facilities available within the school and community.

Bilingualism in the Computer Age did not offer the New Environmental Workshops because of a lack of funds, therefore the project could not meet this objective.

Computer Instruction

- As a result of participating in the program, 80 percent of the students will demonstrate a familiarity with computer use in the ninth grade; an ability to keyboard in the tenth grade; the ability to handle word processors and printers in the eleventh grade; and the ability to program, and to handle word processors and modems in the twelfth grade.

Implementation. In the fall term, students could take financial-information processing (keypunching) and keyboarding. During the spring, students could enroll in a keyboard and a keypunching course.

Outcome. Results of teacher-made tests were available for 23 students in the fall. Eighty-seven percent achieved the passing criterion of 65 percent or higher. The program achieved the proposed objective.

Career Orientation

- As a result of participating in the program for one year, 80 percent of the students enrolled in the orientation course will demonstrate a knowledge of job-searching techniques.

According to the project director, 80 percent of the students enrolled in the orientation course demonstrated knowledge of job-searching techniques. Basically for freshmen, the program instructed students in filling out job forms and had them go through a mock interview developed by the New York State Education Department. Thus, the program met the objective.

NONINSTRUCTIONAL ACTIVITIES

The project proposed noninstructional objectives in attendance and dropout rates, cultural awareness, and staff development.

Attendance and Dropout Rate

- Program students will achieve an overall attendance rate which will be significantly higher than that of the school as a whole.
- Program students will demonstrate a dropout rate which will be significantly less than that of total school population.

To promote better attendance, the program incorporated a number of strategies to be instituted by the bilingual guidance counselor and the family assistant. The family assistant's duties included such activities as home visits and follow-up meetings with parents and students, acting as a liaison between a clinic affiliated with Lincoln Hospital and the students, and coordinating ASPIRA's activities. With the bilingual guidance

counselor, the family assistant monitored program students' attendance.

Staff members all agreed that program students' attendance rates were higher and dropout rates were lower than those of the mainstream students. Project student's attendance rate did exceed that of the school by a significant margin: while the rate for the school population was 68.3 percent, program students had a mean rate of 84.2 percent. The data analyst assessed the statistical significance of this difference through the application of a z-test for the significance of a proportion.* This procedure tested whether the difference between one group's rate (in this case, the program's) and a standard rate (in this case, the school's) is greater than could be expected by chance variation. The z-test results ($z = 4.78$) were statistically significant ($p < .05$); therefore, the project met the proposed objective.

Program dropout rate during the period for which the project provided data (fall 1987) was 8.6 percent, which was lower than the school dropout rate for 1987-88 (11.9 percent). Since the project did not provide any information for the spring semester, OREA could not assess the significance of the difference. It could be projected, however, that the dropout rate of program students continued to be lower than that of the school.

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* Bruning, J.L. and Kintz, B.L. Computational Handbook of Statistics (Glenview, Illinois: Scott, Foresman and Company, 1968).

Cultural Awareness

- As a result of participating in the program, 90 percent of the students will demonstrate an increased awareness of their culture.

Because of the vague way in which this objective was stated without a criterion for indicating achievement, OREA could not determine whether the project had met it.

Staff Development

- Teachers participating in the program will demonstrate significant improvement in the skills necessary to assess students' needs, select appropriate methods of instruction, and to write appropriate courses of study.
- Teachers participating in the program will demonstrate significant improvement in their skills in handling and programming computers.

Monthly departmental meetings included subjects such as student attendance, lesson planning, and test construction. Weekly workshops presented topics ranging from disciplinary problems to general organization of teaching components, and emphasized the goal of viewing writing and reading as processes. Staff members also discussed curriculum and testing measures at monthly workshops. Five staff members took university-level courses.

The project director, who was also an A.P., conducted evaluations three times a semester for new teachers and once a semester for tenured faculty. He also completed informal evaluations that consisted of discussions with the teachers on creative teaching and new curriculum strategies. He gave two demonstrations each semester on teaching N.L.A.

Although no instrument existed to assess increased pedagogical skills, the quantity and variety of staff development training offered would indicate that the project met the first staff development objective.

The bilingual A.P. expressed the need for professional staff to train teachers on how to use the school's computers. A staff development resource specialist in the school offered after-school workshops on computers for teachers. Attendance was optional, and the project did not furnish attendance data, therefore it was impossible to determine whether Bilingualism in the Computer Age met the objective dealing with computer skills.

Additional Services

Teachers who were not funded by Title VII were willing to stay after school to offer supplemental services such as a movie club and teaching more innovative methods of computer use. In addition, the staff established a system of tutoring after school in which each teacher "adopted" five students.

Teachers collected food and clothing and distributed them to program students after classes. There was also a state-funded computer program held every Friday after school at which food was provided. The A.P. for Guidance and Support actively worked with the community to get part-time construction jobs for program students.

Under the ASPIRA Aware Program, students received tutoring, counseling, and family assistance services. In the spring term, ASPIRA helped to create a parent association and worked directly

with 125 program students. However, ASPIRA lacked funds and professional staff. As a result, the staff members of ASPIRA were so involved in dealing with problems and making visits to families that they barely had time for developing cultural and social activities. In order to coordinate their efforts better, the family assistant and ASPIRA staff members met every Friday. At these sessions, they discussed each case and explored ways to work with each other.

Many of the program activities were coordinated with several other projects. ASPIRA provided family assistance, tutoring, and counseling as described above. After-school programs at Bronx Community College, Fordham University, and Hostos Community College offered students academic advisement and college counseling. A community group, the Tremont Improvement Program, worked with students to familiarize them with colleges and the application procedure. The students also participated in a Career Beginners Program, which provided introductory information on careers in various fields. In the spring term, students did reconstruction work in the community after school as a way to earn money. The school was also awarded a Ford Foundation grant to do research on the reasons Hispanic students drop out of school.

IV. CONCLUSIONS AND RECOMMENDATIONS

Bilingualism in the Computer Age, at Morris High School in the Bronx, completed its second year of a three-year Title VII funding cycle. The program's major objective was to improve students' English language proficiency and mainstream them as quickly as possible. During fall 1987, the program served 197 Spanish-speaking LEP students from low-income families.

Bilingualism in the Computer Age achieved the program objectives in E.S.L., N.L.A., computer instruction, career orientation, attendance, and one of two staff development objectives. OREA could not assess one of the staff development objectives, or the cultural awareness or dropout rate objectives. The project did not meet its objectives in content area subjects or New Environmental Workshops.

The number of students served by the project decreased from 335 in 1986-87 to 197 in 1987-88. The program also funded five staff members this year as compared with six last year. This year, however, the program secretary worked only on project-related tasks, a change of responsibilities from last year. This year the program met the N.L.A. objective; last year students failed to make significant gains in Spanish language skills.

Program staff members showed a deep level of commitment and cultural sensitivity toward the students and their families. The idea of each teacher "adopting" five students allowed students to get more individual instruction. In addition, the work of the family assistant and members of ASPIRA who provided clothing and

made intensive home visits are demonstrations of this awareness. The higher attendance and lower dropout rates may have been due to the committed efforts of staff members and a very well planned monitoring of the students.

The major strengths of the project included the commitment of the staff, the support of the school principal, and the project's incorporation of computer learning in the content areas. The program's major weaknesses were lack of teacher training in computers and the dearth of the much needed social work personnel.

The conclusions, based on the findings of this evaluation, lead to the following recommendations:

- If funds permit, hire professional staff development specialists to train teachers in computer skills.
- If funds permit, hire additional support personnel such as a social worker or another family assistant.
- Offer content area courses (particularly social studies) in both fall and spring semesters.
- Rewrite the cultural awareness objective to make it measurable.